



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,791	01/15/2004	Manoj Singhal	15155US01	5464

7590 06/26/2009
CHRISTOPHER C. WINSLADE
MCANDREWS HELD & MALLOY
500 WEST MADISON STREET
34TH FLOOR
CHICAGO, IL 60661

EXAMINER

NEWAY, SAMUEL G

ART UNIT	PAPER NUMBER
----------	--------------

2626

MAIL DATE	DELIVERY MODE
-----------	---------------

06/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/757,791

Applicant(s)

SINGHAL, MANOJ

Examiner

SAMUEL G. NEWAY

Art Unit

2626

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 21-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This is responsive to the RCE filed on 14 April 2009.
2. Claims 1-3 and 21-26 are pending and considered below. Claims 4-20 were canceled and claims 22-26 are new.

Response to Amendment

3. The 35 USC § 112 rejection is withdrawn in view of Applicant's amendment.

Response to Arguments

4. Applicant's arguments with respect to claims 1-3 and 21-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3 and 21-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "Spectrally flattening the portion of the audio signal, thereby resulting in a spectrally flattened decimated portion of the audio signal" (emphasis added). However, spectrally flattening an audio signal does not lead to a decimated of the audio signal. Further, claim 21, which depends upon claim 1, recites "Decimating

the portion of the audio signal". It is unclear how and why a signal, already decimated (in claim 1), should be decimated again. Also "the portion of the audio signal" in line 3 of claim 1 has insufficient antecedent basis in the claim. For the above cited reason "Spectrally flattening the portion of the audio signal, thereby resulting in a spectrally flattened decimated portion of the audio signal" (emphasis added) will be interpreted as 'Spectrally flattening a portion of an audio signal, thereby resulting in a spectrally flattened portion of the audio signal'.

In claim 21, which depends on claim 1, "the spectrally flattened decimated portion" will be interpreted as 'the spectrally flattened portion' in order to provide proper antecedent basis for the limitation.

Claim 23 and its dependent claim 26 are similar to claims 1 and 21 respectively and suffer from the same deficiencies.

The other claims are rejected as they depend upon rejected claims and do not overcome the deficiencies.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3, 21, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (USPN 6,990,443) in view of Zimmerman (US PGPub 2002/0198716).

Claim 1:

Abe discloses a method for classifying an audio signal (Abstract), said method comprising:

calculating a plurality of linear prediction coefficients (LPC) for a portion of the audio signal (FIG. 3, item 13 and related text);

inverse filtering the portion of the audio signal with the plurality of linear prediction coefficients (LPC), thereby resulting in a residual signal (FIG. 3, item 20 and related text);

measuring the residual energy of the residual signal (FIG. 3, items 20, 36, and related text); and

comparing the residual energy to a threshold ("extracting the characteristic quantity of a signal ... and classifying the signal ... according to the characteristic quantity thereof", col. 3, lines 43-51).

Abe does not explicitly disclose spectrally flattening the portion of the audio signal before performing the LPC analysis.

In an audio processing method, Zimmerman discloses a pre-emphasis step spectrally flattening the portion of the audio signal, thereby resulting in a spectrally

flattened portion of the audio signal, before performing an LPC analysis (Fig. step 620 and related text).

It would have been obvious to one with ordinary skill in the art at the time of the invention to have spectrally flattened an audio signal in a pre-emphasis step in order to "to make it less susceptible to finite precision effects in subsequent signal processing" (Zimmerman, [0058]) where the subsequent signal processing may be an LPC analysis (Zimmerman, Fig. 6, step 650 and related text).

Claim 3:

Abe and Zimmerman disclose the method of claim 1, Abe further discloses wherein the portion of the audio signal comprises a frame (FIG. 2 and related text).

Claim 21:

Abe and Zimmerman disclose the method of claim 1, Abe further discloses classifying the audio signal based on the comparison of the residual energy of the spectrally flattened portion ("classifying the signal ... according to the characteristic quantity thereof", col. 3, lines 43-51).

Claims 23 and 25:

System claims 23 and 25 and method claims 1, and 3 are related as system and the method of using same, with each claimed element's function corresponding to the claimed method step. Accordingly claims 23 and 25 are rejected with the same rationale as applied above with respect to method claims 1 and 3.

9. Claims 2 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (USPN 6,990,443) in view of Zimmerman (US PGPub 2002/0198716) and in further view of Koishida et al (USPN 6,658,383).

Claim 2:

Abe and Zimmerman disclose the method of claim 1, but they do not explicitly disclose classifying the portion of the audio signal as music, if the residual energy exceeds the threshold; and classifying the portion of the audio signal as speech, if the threshold exceeds the residual energy.

In a method, similar to Abe's, of audio classification, Koishida teaches that "linear prediction-based techniques such as CELP can deliver high quality reproduction for speech signals, but yield unacceptable quality for the reproduction of music signals" (col. 1, lines 33-37).

It would have been obvious to one with ordinary skill in the art at the time of the invention to use Abe's residual energy to classify speech and music because as Koishida teaches LPC (linear predictive coding) techniques model speech better than they do music, therefore giving a smaller error (residual energy) for speech signals compared to the error for music signals.

Claim 24:

System claim 24 and method claim 2 are related as system and the method of using same, with each claimed element's function corresponding to the claimed method step. Accordingly claim 24 is rejected with the same rationale as applied above with respect to method claim 2.

10. Claims 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (USPN 6,990,443) in view of Zimmerman (US PGPub 2002/0198716) and in further view of De Lima Araujo et al ("Formant Frequency Estimation Using a Mel Scale LPC Algorithm", In Proc. of ITS '98, IEEE Intl., Vol. 1, 1998, pp. 207-212).

Claim 22:

Abe and Zimmerman disclose the method of claim 1, but they do not explicitly disclose decimating the portion of the audio signal before spectrally flattening it.

In a speech processing method, De Lima Araujo discloses decimating a portion of a speech signal before a pre-emphasis step (page 209, col. 1, paragraphs 5 and 6).

It would have been obvious to one with ordinary skill in the art at the time of the invention to have decimated Abe in view of Zimmerman's audio signal before spectrally flattening in a pre-emphasizing step in order to reduce fusion errors (De Lima Araujo, page 209, col. 2, paragraph 1).

Claim 26:

System claim 26 and method claim 22 are related as system and the method of using same, with each claimed element's function corresponding to the claimed method step. Accordingly claim 26 is rejected with the same rationale as applied above with respect to method claim 22.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAMUEL G. NEWAY whose telephone number is (571)270-1058. The examiner can normally be reached on Monday - Friday 8:30AM - 5:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626

/S. G. N./
Examiner, Art Unit 2626